13pp

OPPT-2002-0060-0009

INITIAL REVIEW EXPOSURE REPORT	P-98-0509	Page 1 of: 13
Assessor: POWERS	Search ( )Y	Focus Date: 03/12/98
SAT Health: L-M		Focus Rep: MKP
SAT Eco: H		SAT Rep: GT
Submitter: Bush Boake Allen, Inc.	Max. PV (kg/yr)	Manuf. X / Import

Use:

Consumer Exposure ( )no,

Analogs/Comments

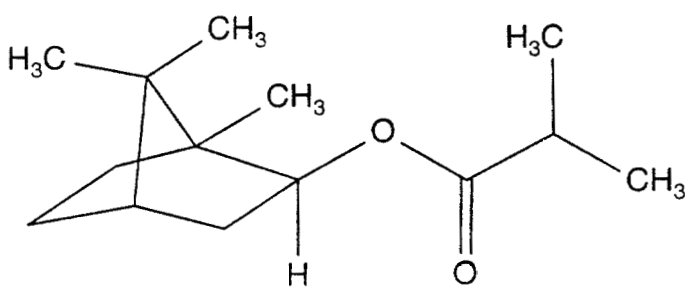
Chemical Name:

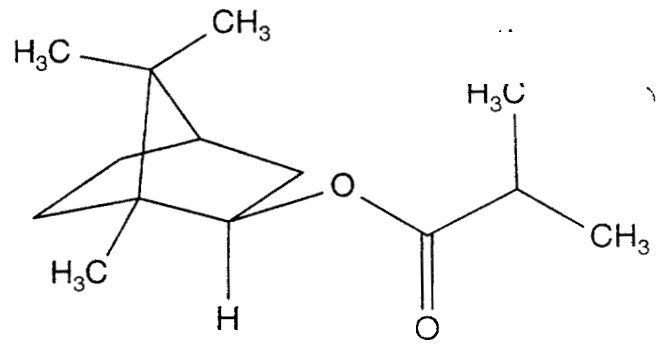
Propanoic acid, 2-methyl-, 1,7,7-trimethylbicyclo[2.2.1]hept-2-yl ester, exo

Trade Name: NK

CAS: 85586-67-0

Structure:





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INITIAL REVIEW EXPOSURE REPORT	P-98-0497	

ANALOG DATA FORM

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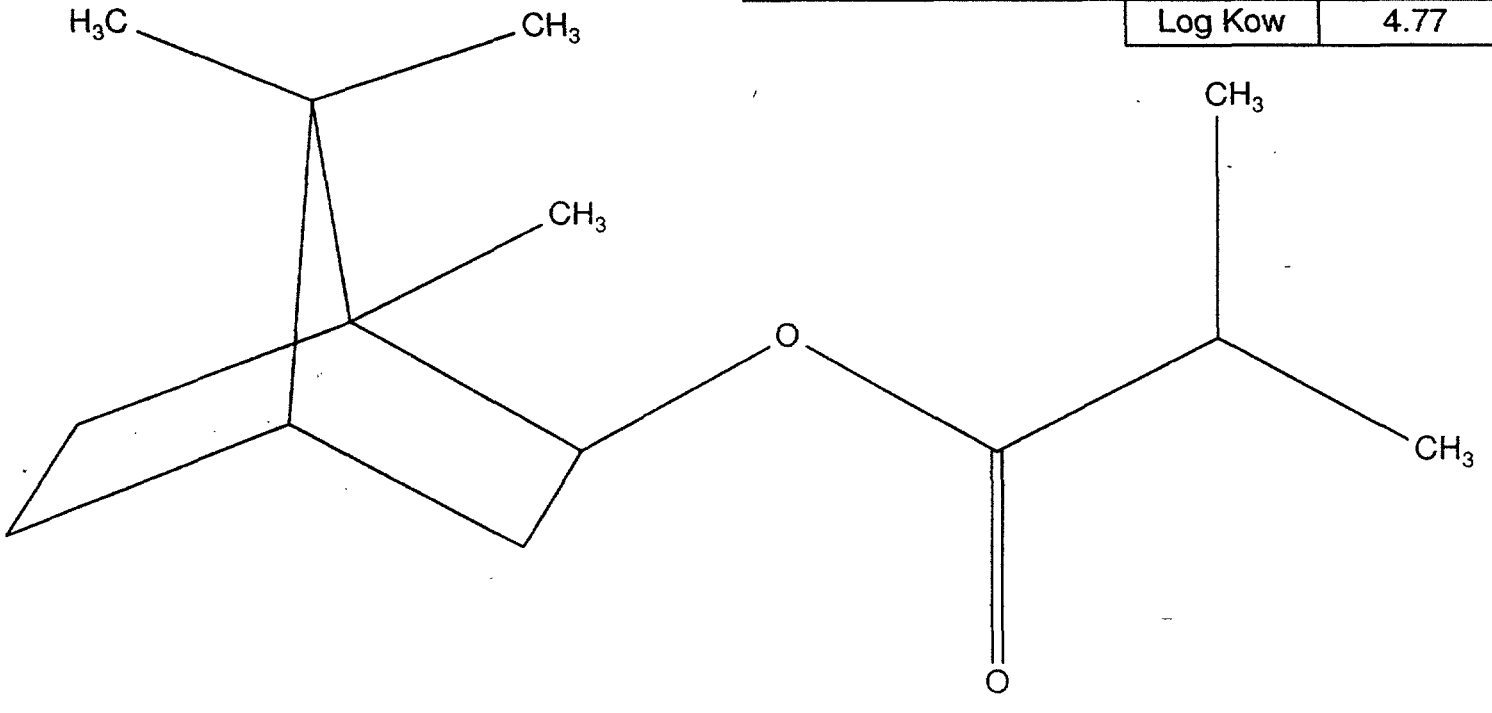
		RATING		PHOTO	RATING
ANAEROBIC BIODEGRADATION	Ultimate	3		DIRECT	
	Primary			INDIRECT	
Comments:					
				AT OX	
HYDROLYSIS	A.			OH	3-4
(pH 7, 25 C)	B.			O3	
Comments:					
SORPTION TO SOIL & SEDIMENT		3			
Comments:					
MIGRATION TO GROUND WATER		3		Persist/Bioacc	
BIO COMMENT					

Page 2	
%	75-90
Sorp	2-3
Strip	4
Rem	
Dest	3
Ult	2-3
Prim	

MOL WT	FORM
224.35	C14 H24 O2
Log Kow	4.77

Structure:



INITIAL REVIEW EXPOSURE REPORT					P-98-0509			Page 3 of: 13
STATE	NEAT							EPI ESTIMATIONS
	MFG							
FORMUL	C14 H24 O2		% < 500		C14H24O2			
MOL WT	224.35		% < 1000		224.35			
PROPERTY	Submitted	ICB-CRSS		Method/Ref				
MP (C)								
BP (C)				Est.		@ 760 tor		
@ P (torr)	760.00							
VP (torr)				Est.				
S-H2O (g/L)				Est.		mg/L		
S-Org (g/L)						mg/L		
Log Kow								
pH, pKa				Log Koc				
Light Absorption (nm	< > 290			Log BCF	BCF			
Solvent:				H (atm m3/mol)	2.94E-04			
HYDRO t(1/2) @ pH 7, 25 C	1000.00	da		Persistence / Bioaccumulation	P1 B1			
Volatilization (H2O) t(1/2)	River		hr	Lake		da		
AOP t(1/2) (hr)	OH	13.56	O3		Total	13.56		
BIODEG	Linear Prob: 0.45	Nonlinear Prob: 0.61	Survey Ult: WK-MO	Survey Prim: DA-WK				
STP (% Removal)	Tot	70.74	Biod	0.59	Ads	66.69	Air	3.45

REMOVAL IN WWT/POTW	% Overall		0	25	50	(75)	(90)	=> 99
			CATEGORY					
		RATING	1	2		3		4
Sorption			low	(moderate)		(strong)		v.strong
Stripping			extensive	moderate		low		(negligible)
Biodegradation	Removal		unknown	(high)		(moderate)		negligible
	Destruction		unknown	complete		partial		
Comments:								
AEROBIC BIODEGRADATION	Ultimate		<= days	(weeks)		(months)		> months
t(1/2)	Primary		<= days	weeks		months		> months
Comments:								

				CATEGORY			
			RATING	1	2	3	4
ANAEROBIC BIODEGRADATION		Ultimate		<= days	weeks	months	> months
		Primary		<= days	weeks	months	> months
Comments:							
	HYDRO (da)						
HYDROLYSIS	1000	A.		<= mins	hours	days	=> months
(pH 7, 25 C)		B.		<= mins	hours	days	=> months
Comments:							
SORPTION TO SOIL & SEDIMENT				v.strong	strong	moderate	low
Comments:							
MIGRATION TO GROUND WATER				negl	slow	moderate	rapid
Comments:							
VOLATILIZATION	Rivers (hr)			negl			
(w/o sediment)	Lakes (da)			negl			
Comments:							
PHOTOLYSIS		A. Direct		negl	slow	moderate	rapid
		B. Indirect		negl	slow	moderate	rapid
Comments:							
		AOP t(1/2) hr					
ATMOSPHERIC	A. OH	13.6		negl	slow	moderate	rapid
OXIDATION	B. O3			negl	slow	moderate	rapid
Comments:							

FINAL

INITIAL REVIEW EXPOSURE REPORT

CASE NUMBER(S): P-98-0509

ENVIRONMENTAL RELEASES

==========

RELEASE ID#: 1 Number of Release Sites: 1
RELEASE ACTIVITY: (X)MFG ( )PRO ( )IND USE ( )COMM USE ( )CONS USE

RELEASE DESCRIPTION:	WATER	LANDFILL	INCINER	LAND/INCIN	FUGITIVE
Total Releases:	690.00 (kg/yr)	0.00 (kg/yr)	3.00e+04 (kg/yr)	0.00 (kg/yr)	4.91 (kg/yr)
Release Days/yr:	15				45
Per Site Release:	46.00 (kg/day)	0.00 (kg/yr)	3.00e+04 (kg/yr)	0.00 (kg/yr)	0.11 (kg/day)

REMARKS : Incineration release is less than trigger of 200 kg/site/yr after 99.9% destruction. Fugitive air release less than trigger of 23 kg/site/yr.

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RELEASE ID#: 2 Number of Release Sites: 3
RELEASE ACTIVITY: ( )MFG (X)PRO ( )IND USE ( )COMM USE ( )CONS USE

RELEASE DESCRIPTION:	WATER	LANDFILL	INCINER	LAND/INCIN	FUGITIVE
Total Releases:	1800.00 (kg/yr)	1200.00 (kg/yr)	3.00e+04 (kg/yr)	0.00 (kg/yr)	27.00 (kg/yr)
Release Days/yr:	250				250
Per Site Release:	2.40 (kg/day)	400.00 (kg/yr)	1.00e+04 (kg/yr)	0.00 (kg/yr)	3.60e-02 (kg/day)

REMARKS : Incineration release is less than trigger of 200 kg/site/yr after 99.9% destruction. Fugitive air release is less than trigger of 23 kg/site/yr.

CASE NUMBER(S): P-98-0509

SITE-SPECIFIC HUMAN AND AQUATIC EXPOSURES TO SURFACE WATER RELEASES

RELEASE ID#: 1

RELEASE ACTIVITY: (X)MFG ( )PRO ( )IND USE ( )COMM USE ( )CONS USE

Facility Name: Bush Boake Allen, Inc.

Facility Location: Jacksonville, FL 32254

Receiving Water Name: St. Johns River

Reach Number: 03080103013

Facility on Reach? [ ] Yes [X] No

Discharge Type: [ ] Direct [X] Indirect

NPDES Permit #: FL0026000 (for indirects, use POTW permit #)

Data Source:
[ ] Task 73
[ ] IFD
[ ] Submitter
[ ] Contractor
[ ] Region/State
[X] Other SIDS/Indirect

Removal in Wastewater Treatment: 75.000 % - 90.000 %

Plant Effluent Flow (MLD): 143.679

Release (kg/site/day): 46.000 (before treatment) 11.500 (after treatment)

Release days/yr: 15

FLOW TYPE	STREAMFLOW(MLD)	STREAM CONC(ug/l)	ESTIMATED PDRs (mg/yr) DRINKING H20	FISH INGEST*
MEAN	9244.00	1.24	3.73e-02	0.29
LOW	2840.00	4.05		
PLANT	143.68	80.04		

*Where, STREAM CONC. = [(release after treatment) X (1000)] / (streamflow)
DRINKING H20 PDR = (mean stream conc) X (water ingested) X (release days/yr) / (0.001)
FISH ING PDR = (mean stream conc) X (Bio Concentration Factor) X (fish ingested/day) X (release days/yr) X (1.0e-6)

REMARKS : COC = 10 ppb and is not exceeded. No aquatic endangered species are reported along the reach.

1 CFS = 2.4465 MLD 1 MGD = 3.7854 MLD

CASE NUMBER(S): P-98-0509

SIC-CODE BASED HUMAN AND AQUATIC EXPOSURES TO SURFACE WATER RELEASES

RELEASE ID#: 2

RELEASE ACTIVITY: ( )MFG (X)PRO ( )IND USE ( )COMM USE ( )CONS USE

RELEASE ACTIVITY SIC CODE(S):

SIC CODE DESCRIPTION:

Removal in Wastewater Treatment: 75.000 % - 90.000 %
Bio Concentration Factor : 933.000
Release (kg/site/day): 0.800 - 2.400 (before treatment) 0.600 (after treatment)

Release days/yr: 250

Water ingested (liters/day) : 2.000

Fish consumed (grams/day) : 16.900

PLANT TYPE	% TILE	STREAMFLOW (MLD) MEAN	STREAMFLOW (MLD) LOW	STREAM CONC (UG/L) MEAN	STREAM CONC (UG/L) LOW	HUMAN PDRs (MG/YR) WATER	HUMAN PDRs (MG/YR) FISH *
All	50	824.23	122.98	0.73	4.88	0.36	2.87
All	10	93.09	12.55	6.45	47.81	3.22	25.41

*Where, STREAM CONC = [(Release after treatment) X (1000)] / (Streamflow)
DRINKING WATER PDR = (Mean stream conc) X (water ingested/day) X (Release days/yr) X (0.001)
FISH INGESTION PDR = (Mean stream conc) X (Bio Concentration Factor) X (fish ingested/day) X (Release days/yr) X (1.0 E-6)

REMARKS : COC = 10 ppb and is exceeded 131 days/yr.

1 CFS = 2.4465 MLD 1 MGD = 3.7854 MLD

CASE NUMBER(S): P-98-0509

DRINKING WATER PDRs RESULTING FROM LANDFILL RELEASES
(For PMN Substances With Potential For Migration To Ground Water)

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RELEASE ID#: 2

RELEASE ACTIVITY: ( )MFG (X)PRO ( )IND USE ( )COMM USE ( )CONS USE

RELEASE DESCRIPTION: drum residue

TOTAL RELEASE TO LANDFILL (kg/yr) : 1200.000 kg/yr
TOTAL QUANTITY OF SLUDGE LANDFILLED (kg/yr) : 180.000 kg/yr
NUMBER OF SITES : 3
FACTOR : MODERATE

POTENTIAL DOSE RATE (PDR) (mg/yr): 19.78
PDR (mg/yr) = (Quantity landfilled/site/yr) X (Factor Below)

REMARKS :

==========

CASE(s) : P-95-0529

SIC CODE-BASED PROBABILISTIC DILUTION MODEL (PDM) RESULTS
FOR FACILITY
High-end Case Scenario

Release ID# : 1

Release Activity: ( )MFG (X)PRO ( )IND USE ( )COMM USE ( )CONS

Release Activity SIC Code (s) :

SIC Code Description :

Number of Release Sites : 3

Removal in Wastewater Treatment (Percent) : 75-90 %

	DIRECT	INDIRECT	ALL
10th %tile Mean Streamflow (MLD) :			
10th %tile Low Streamflow (MLD) :			
10th %tile Effluent Streamflow (MLD) :			

RELEASE DAYS/YR	AMOUNT RELEASED (kg/site/day)	CONCERN CONC. (ug/l)	PERCENT OF YEAR EXCEEDED*	DAYS PER YEAR EXCEEDED
250	0.60	10.00000	35.80	130.67

(131)

* 'PERCENT OF YEAR EXCEEDED' is obtained by dividing the 'DAYS PER YEAR EXCEEDED' by 365 days/yr.

Remarks:

Potential Dose Rate From Dermal Contact

CAS # : _____ CASE # : P-98-0509

----- USER INPUTS -----

height fraction of chemical in product =
5.0000e-03 5.0000e-03
Frequency of events per year (hand) = 365.000
1095.000 3285.000 events/yr
Frequency of events per year (body) = 180.000
365.000 730.000 events/yr
Number of years of use = 70.000
70.000 70.000 yrs/life
Skin surface area to body weight (hands) = 15.600
18.800 cm2/kg
Skin surface area to body weight (body) = 286.000
316.000 cm2/kg
Film thickness of liquid on skin surface =
1.0000e-02 cm
Density of formulation =
0.940 g/cm3
Dilution fraction =
1.0000e-03

----- EXPOSURES PREDICTED -----

Central APDR (hand, body) = 7.3320e-04 mg/kg-day1.3442e-02 mg/kg-day
High end APDR (hand, body)= 7.3320e-04 mg/kg-day1.3442e-02 mg/kg-day
Bounding APDR (hand, body)= 8.8360e-04 mg/kg-day1.4852e-02 mg/kg-day

Note : Central and high-end LADDs are equal because of equal Wt. fractions
uncertainty bounds
Central LADD = 1.5642e-02 mg/kg-day (7.3621e-03 - 3.3483e-02)
High end LADD = 1.5642e-02 mg/kg-day (7.3621e-03 - 3.3483e-02)
Bounding LADD = 1.7503e-02 mg/kg-day (8.2079e-03 - 3.7656e-02)

= 971 mg/kg

Annual Frequency of Use	:	12	Events/Year
Mass of Product	:	198.000	grams
Duration of Use	:	730.000	hours
Zone 1 Volume	:	9.000	cubic meters
Whole House Volume	:	408.000	cubic meters
House Air Exchange Rate	:	0.200	air exchanges/hr
User Inhalation Rate	:	0.600	cubic meter/hr (during use)
Non-User Inhalation Rate	:	1.100	cubic meter/hr (& user after use)
Molecular Weight	:	224.350	g/mole
Vapor Pressure	:	0.060	torr
Weight Fraction	:	5.000E-03	
Portion of Aerosol in Air	:	1.000	
Starting Time	:	12:00	NOON

OUTPUT SUMMARY

Duration Following Each Use	:	0.033	hours
Interval Between Uses	:	730.000	hours

User Potential Dose Rate From Inhalation	:	270.623	mg/yr
Non-User Potential Dose Rate From Inhalation	:	146.475	mg/yr

	Average (mg/m3)	Peak (mg/m3)
Concentration in zone of release		
During period of use	0.051	0.052
During period after use	0.050	0.052
Concentration in Zone 2		
During period of use	0.016	0.016
During period after use	0.016	0.016
Concentration to which User and Non-User are exposed		
Person Using Product (user)	0.051	0.052
Person Not Using Product (non-user)	0.015	0.052

HOURLY ACTIVITY PATTERN

User	:	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Non-User	:	1	1	1	1	1	1	1	3	4	5	4	2	4	6	7	4	2	2	7	4	4	4	1	1
Hour	:			03			06			09			^			15			18			21			24

START HOUR

Room of Use : Bathroom

Annual Frequency of Use	:	338	Events/Year
Mass of Product	:	134.000	grams
Duration of Use	:	0.330	hours
Zone 1 Volume	:	20.000	cubic meters
Whole House Volume	:	408.000	cubic meters
House Air Exchange Rate	:	0.200	air exchanges/hr
User Inhalation Rate	:	1.300	cubic meter/hr (during use)
Non-User Inhalation Rate	:	1.100	cubic meter/hr (& user after use)
Molecular Weight	:	224.350	g/mole
Vapor Pressure	:	0.060	torr
Weight Fraction	:	1.000E-03	
Starting Time	:	10:00	AM

OUTPUT SUMMARY

Evaporation Time	:	12.114	hours
Release Time	:	12.114	hours (Evaporation Time)
Duration Following Each Use	:	25.587	hours
Interval Between Uses	:	25.917	hours

User Potential Dose Rate From Inhalation	:	1.81804E+03	mg/yr
Non-User Potential Dose Rate From Inhalation	:	1.42866E+03	mg/yr

	Average (mg/m3)	Peak (mg/m3)
Concentration in zone of release		
During period of use	2.642	4.797
During period after use	0.152	4.911
Concentration in Zone 2		
During period of use	0.024	0.070
During period after use	0.057	0.230
Concentration to which User and Non-User are exposed		
Person Using Product (user)	0.183	4.911
Person Not Using Product (non-user)	0.148	4.911

HOURLY ACTIVITY PATTERN

User	:	1	1	1	1	1	1	1	3	4	5	5	5	5	5	5	5	5	5	4	4	4	1	1
Non-User	:	1	1	1	1	1	1	1	3	4	5	4	2	4	6	7	4	2	2	7	4	4	4	1	1
Hour	:			03			06			09^			12			15			18			21			24

START HOUR

Room of Use : Utility Room

CASE NUMBER(S): P-98-0509

Environmental Fate Testing Recommendations

RE: P98-0509
TO: Mary Katherine Powers, EAB
FROM: Robert S. Boethling, EAB

A high concern for ecotoxicity has been expressed for this substance, and there is modest exceedance of the COC. Removal in treatment has been estimated to be 75-90 %, mainly by sorption to sludge. Biodegradability of the substance is uncertain, but if it is high enough, removal could be higher and this may mitigate ecotoxicity concerns. Biodegradability should be determined using a Ready Biodegradability method (835.3110). If the substance does not pass this test, it should be tested in an activated sludge simulation test such as the Porous Pot test (835.3220).